

IN THE SPECIFICATION

[0044] Referring again to FIG. 1, after exiting the fluid passageway 110, the mixture may, optionally, pass through a second heat exchanger 150 to at least partially vaporize the mixture. This second heat exchanger 150 may have a residence time of less than 10 minutes. This vaporization step may also be accomplished without a heat exchanger by lowering the pressure applied to the condensed mixture (e.g., by passing the condensate into an acid removal column 160 that is kept at a relatively lower pressure). The vaporized mixture may then, optionally, be treated to remove HCl, preferably by injecting it into an acid removal column 160. The acid removal column 160 may also help remove any entrained catalyst (e.g., CuCl) that could otherwise contribute to downstream corrosion. In the acid removal column 160, the vaporized condensate may preferably encounter a counter-flowing liquid supplied by counter-flowing liquid line 170 to a higher point in the column (e.g., the upper third). The counter-flowing liquid may trap the remaining HCl and other reactants, which may be removed from the bottom of the acid removal column 160 and recycled to the reactor 50. The dialkyl carbonate mixture may be removed from the top of the acid column 160 via exit line 200, and, optionally, passed into an azeotrope column 180. As shown in Fig. 6, an optional ion exchange resin bed 190 may be included after the acid removal column 160, or at any other position downstream with respect to the acid removal column 160. It may be advantageous to include an optional ion exchange resin bed 190 after water is removed from the product dialkyl carbonate stream in the purification section 40. In a preferred embodiment, the apparatus does not include an ion exchange resin bed 190.

[0045] In a preferred[,] embodiment, the method comprises reducing the concentration of hydrochloric acid in the mixture to less than about 1×10^{-3} mol/L, more preferably less than about 5×10^{-4} mol/L, even more preferably less than about 1×10^{-4} mol/L, based on the total composition after removing hydrochloric acid.